

REMARKS

This Amendment and Response to Non-Final Office Action is being submitted in response to the non-final Office Action mailed May 11, 2005. Claims 1-67 are pending in the Application. Claims 1, 2, 5, 9-11, 15-18, 21, 25, 26, 30-33, 36, 40-42, 46-49, 52, 56, 57, 61, 62, and 65-67 stand rejected under 35 U.S.C. 102(e) as being anticipated by Azizoglu et al. (U.S. Patent No. 6,430,201). Claims 3, 24, 29, 34, 45, 50, and 60 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Azizoglu et al. in view of Michel et al. (U.S. Patent No. 6,765,933). Claims 4, 12, 20, 27, 35, 43, 51, and 58 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Azizoglu et al. Claims 6-8, 13, 22-24, 28, 37-39, 44, 53-55, 59, 63, and 64 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Azizoglu et al. in view of Bleickardt et al. (U.S. Patent No. 5,461,622). Finally, the Drawings stand objected to as Figure 1 should be designated by a legend as "Prior Art."

In response to these rejections, Claims 1, 10, 17, 32, 41, 48, and 63-65 have been amended to further clarify the subject matter which Applicant regards as the invention and the Drawings have been amended. The amendments are fully supported in the Specification, Drawings, and Claims of the Application and no new matter has been added. Based upon these amendments, reconsideration of the Application is respectfully requested in view of the following remarks.

Objection to the Drawings:

The Drawings stand objected to as Figure 1 should be designated by a legend as "Prior Art."

In response to this objection, informal sheets 1-11 of the Drawings have been replaced with formal replacement sheets 1-11, and Figure 1 has been designated by a legend as "Prior Art."

Therefore, Applicants submit that the objection to the Drawings has now been overcome and respectfully request that this objection be withdrawn.

Rejection of Claims 1, 2, 5, 9-11, 15-18, 21, 25, 26, 30-33, 36, 40-42, 46-49, 52, 56, 57, 61, 62, and 65-67 Under 35 U.S.C. 102(e):

Claims 1, 2, 5, 9-11, 15-18, 21, 25, 26, 30-33, 36, 40-42, 46-49, 52, 56, 57, 61, 62, and 65-67 stand rejected under 35 U.S.C. 102(e) as being anticipated by Azizoglu et al. (U.S. Patent No. 6,430,201).

In response to this rejection, Applicants submit that the systems and methods of Azizoglu et al. differ from the systems and methods of the present invention in the manner described in the Background of the Application, which states, in relevant part:

One solution to transmitting sub-rate data streams encoded with different protocols is to interpret or extract the data from its respective protocol and then re-map the extracted data within the high speed network protocol for transmission over the communication network. However, if the data is contained in high layers of its respective protocol, there is a need to have a data level processor to interpret the data protocol to retrieve the data prior to re-mapping and transmitting the data via the high speed network protocol. Furthermore, at the receiving end, it is necessary to have another processor to extract the data from the network protocol and re-encode the data back into the correct layers of its original protocol. This results in a very complex and expensive system that may have the effect of introducing large amounts of data latency.

[Referring to the conventional system of Figure 1 of the Application] The network element 100 is shown receiving three packet streams for transmission, where each packet stream is encoded using a different transmission protocol. For example, packet stream 1 is encoded using protocol A, packet stream 2 is encoded using protocol B, and packet stream 3 is encoded using protocol C. For example, protocol A may be the FibreChannel protocol, protocol B may be the ESCON protocol, and protocol C may be the GigE protocol.

The network element 100 includes a protocol A receiver 104, a protocol B receiver 106, and a protocol C receiver 108. The components 104, 106, and 108 are capable of receiving data encoded in the various transmission protocols for transmission over the network.

The components 104, 106, and 108 are coupled to corresponding packet interpreters 110, 112, and 114 that operate to interpret or extract data from each stream. (Emphasis added). The data output from the packet interpreters 110, 112, and 114 are coupled to the network protocol processor 102 that re-encodes the data into the high speed network protocol for transmission over the network. The reverse of the above process is needed at each receiving network element to extract the received data from the network protocol and re-encode the data back into its original protocol.

As demonstrated above, one problem with current systems is that separate packet interpreters are used for each data protocol received. (Emphasis added). For example, the network element 100 is required to have a specific packet interpreter for each received data stream, since each stream is encoded using a different protocol. This adds complexity to the network element and limits its flexibility since the network element must be set up in advance to receive and interpret specific data stream protocols. Furthermore, this complexity and cost extends to both the transmitting and receiving network elements.

Another problem with current systems is that to interpret the packets of each protocol, data buffering may be required to temporarily store the interpreted data before or during the interpreting or re-encoding processes. The data buffering introduces data latency, since data contained in each interpreted packet now takes additional time to reach its final destination.¹

The inefficient and undesirable separate packet interpreters of Azizoglu et al. are represented by the 8b/10b codecs 22-1 and 22-2 of the transmitter, which remove the run-length code overhead from each stream, essentially interpreting each stream.²

As the Summary of the Application states:

The present invention includes a system for transporting one or more sub-rate data streams over a communication network using a selected network protocol. The system can receive the sub-rate data streams encoded using different protocols and transparently frame these data streams into a data payload that is loaded into a network frame and transmitted over a high speed communication network using a network protocol. *The system frames the sub-rate data streams without using protocol interpreters to interpret the sub-rate data, and in doing so, avoids the problems of complexity, cost, and data latency present in conventional systems.* (Emphasis added).³

This difference between the systems of Azizoglu et al. and the systems of the present invention is now made explicit in amended Claim 1, which recites:

¹ Application, pp. 1-3.

² See Azizoglu et al., column 4, lines 38-62.

³ Application, p. 4.

1. An apparatus for transmitting a sub-rate data stream over a communication network that uses a selected network protocol, wherein the sub-rate data stream has an associated sub-rate protocol, the apparatus comprising:

a rate adapter coupled to receive *an uninterpreted sub-rate data stream* (emphasis added) and operable to adapt a rate characteristic associated with a sub-rate protocol to a rate characteristic associated with a selected network protocol to generate a rate-adapted data stream from the sub-rate data stream; and

a payload framer coupled to receive the rate-adapted data stream and operable to frame the rate-adapted data stream into a payload for transmission over a communication network using the selected network protocol.

Corresponding amendments have been made to independent Claims 10, 17, 32, 41, 48, and 63-65.

Therefore, Applicants submit that the rejection of Claims 1, 2, 5, 9-11, 15-18, 21, 25, 26, 30-33, 36, 40-42, 46-49, 52, 56, 57, 61, 62, and 65-67 under 35 U.S.C. 102(e) has now been overcome and respectfully request that this rejection be withdrawn.

Rejection of Claims 3, 24, 29, 34, 45, 50, and 60 Under 35 U.S.C. 103(a):

Claims 3, 24, 29, 34, 45, 50, and 60 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Azizoglu et al. in view of Michel et al. (U.S. Patent No. 6,765,933).

The above arguments apply with equal force here.

Therefore, Applicants submit that the rejection of Claims 3, 24, 29, 34, 45, 50, and 60 under 35 U.S.C. 103(a) has now been overcome and respectfully request that this rejection be withdrawn.

Rejection of Claims 4, 12, 20, 27, 35, 43, 51, and 58 Under 35 U.S.C. 103(a):

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Therefore, Applicants submit that the rejection of Claims 4, 12, 20, 27, 35, 43, 51, and 58 under 35 U.S.C. 103(a) has now been overcome and respectfully request that this rejection be withdrawn.

Rejection of Claims 6-8, 13, 22-24, 28, 37-39, 44, 53-55, 59, 63, and 64 Under 35 U.S.C. 103(a):

Claims 6-8, 13, 22-24, 28, 37-39, 44, 53-55, 59, 63, and 64 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Azizoglu et al. in view of Bleickardt et al. (U.S. Patent No. 5,461,622).

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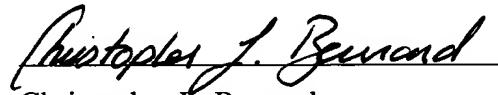
Therefore, Applicants submit that the rejection of Claims 6-8, 13, 22-24, 28, 37-39, 44, 53-55, 59, 63, and 64 under 35 U.S.C. 103(a) has now been overcome and respectfully request that this rejection be withdrawn.

CONCLUSION

Applicants would like to thank Examiner for the attention and consideration accorded the present Application. Should Examiner determine that any further action is necessary to place the Application in condition for allowance, Examiner is encouraged to contact undersigned Counsel at the telephone number, facsimile number, address, or email address provided below. It is not believed that any fees for additional claims, extensions of time, or the like are required beyond those that may otherwise be indicated in the documents accompanying this paper. However, if such additional fees are required, Examiner is encouraged to notify undersigned Counsel at Examiner's earliest convenience.

Respectfully submitted,

Date: July 5, 2005


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AMENDMENTS TO THE DRAWINGS

Please replace informal sheets 1-11 of the Drawings with formal replacement sheets 1-11, without prejudice or disclaimer to continued examination on the merits.